Actiontec™

56K ISA Lite™

Internal Data/Fax Modem for Windows

User's Manual

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Table of Contents

Proprietary Notice and Disclaimer *1*
Introduction 2
Contacting Actiontec Customer Support 2
Do This First 3
For Windows 95 and Windows 98 Installations *3*
For Windows NT 4.0 Installation *7*
Installing The Modem 8
Hardware Installation *8*
Connecting Devices To The Modem *10*
Configuring Windows 95 ..... *11*
Configuring Windows 95 OEM SR2 ..... *14*
Configuring Windows 98 ..... *18*
Configuring Windows NT 4.0 ..... *25*
Installing and Configuring Communications Software 29
The Modem's Voice Features *29*
Troubleshooting 30
Windows 95 and Windows 98 ..... *31*
Uninstalling the Modem *33*
Note to users of Windows 95 and 98 ..... *34*
Note to users of Windows NT *35*
Common Problems *35*
Appendix B: Communications Regulations 38

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Introduction

Thank you for purchasing the *Action*tec 56K ISA Lite internal modem. The Advantage incorporates the latest technology in host-based V.90 modems. This new technology provides vast improvements in both the performance and the capabilities of personal computer fax/modems.

Controller-less modems, also known as Win Modems or Windows Modems, utilize your computer's Central Processing Unit (or CPU) to perform some of their functions. The modems on-board Digital Signal Processing (DSP) circuitry handles the most processor-intensive functions such as V.90 and V.34 modulation leaving the system CPU to perform mundane tasks like data compression. This sharing of system resources results in a streamlined, more reliable modem that does not tax overall system speed. This modem also benefits from greater access to memory and disk storage space through the system CPU.

Because their control code resides on disk and is easily upgradable, host-based modems keep up with advances in speed and capabilities that Personal Computers make. Simply download the new driver, follow the installation instructions, and reboot your system to take advantage of the latest improvements in personal computer hardware design and performance.

Contacting *Action*tec Customer Support

*Action*tec Electronics prides itself on making high-quality, durable, high-performance products. If you should need assistance, the *Action*tec Technical Support Department is available *for registered users only* via e-mail at:

isalite@actiontec.com

New drivers are released as need arises to insure maximum compatibility and operation of your new modem. Find out about these and other new *Action*tec products at the *Action*tec web site:

http://www.actiontec.com

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Do This First

Please read the following tips before attempting to install your new modem.

For Windows 95 and Windows 98 Installations

Be sure to remove all other modem drivers from your operating system. To do this, right-click **My Computer,** choose **Properties** from the menu that appears, then click on the **Device Manager** tab. Double-click the **Modems** icon in the list of devices to show the modems installed. Click once on the icon next to any modems in this list to select them. When all of the modems are selected, click **Remove.**

Turn off the computer and physically remove your old modem from the system. *Once you remove the old modem and its drivers from your system, you will need the old modem driver diskette if you wish to reinstall it at a later date.*

Restart the computer. On the taskbar, click **Start.** On the **Start** menu, click **Settings,** then click **Control Panel.** Double-click on the **Modems** icon. Select all of the listed modems and click **Remove.** Shut down (rather than restart) the computer. Wait 5 seconds before turning it back on.

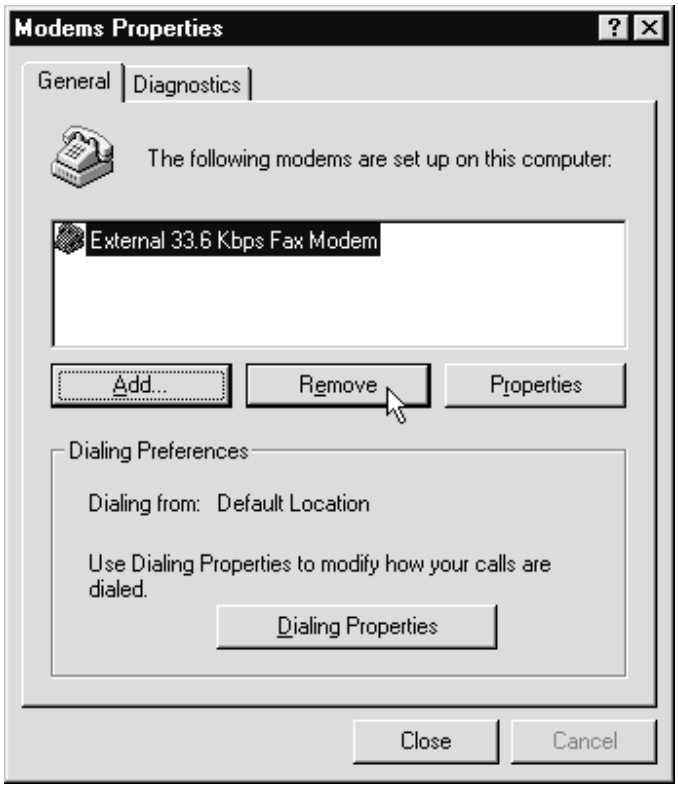

Figure 1: The Modems Properties Panel

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If you are going to use the Telephone Answering Machine (TAM) functions of the modem and you are running Windows 95, you need to install a software component called Unimodem V. If you have Windows 95 OEM Service Release 2 (Version 4.00.950 B) or a later version of Windows, this component comes standard as part of the operating system.

To find out which version of Windows 95 you are using, right click the **My Computer** icon on the desktop, and choose **Properties** from the menu that appears. If the version of Windows 95 is 4.00.950 or 4.00.950A, go to the UNIMODEM directory of the CD-ROM that came with your modem and right-click on the **UNIMODV.INF** icon, (this may be named **UNIMODV**) then click on **Install.**. Restart your computer to enable the drivers.

Make sure you have an available COM port and IRQ on your computer. The modem needs one IRQ and one COM Port in order to function. To check which interrupts are available on your system, double-click on the **System** icon in Control Panel and click the **Device Manager** tab. Highlight **Computer** in the dialog box and click **Properties.** There are only 16 (0 to 15) interrupts in a PC system. Make a note of any interrupt not listed.

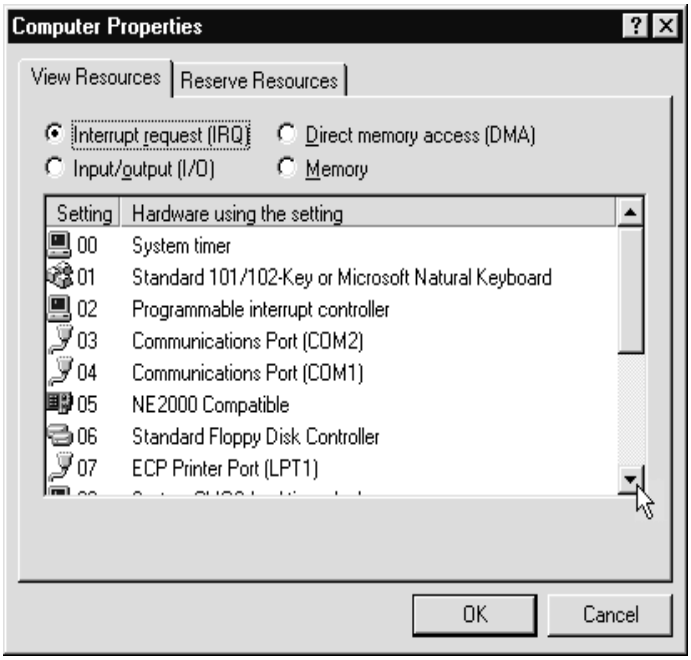

Figure 2: Windows 95 IRQ Resources Dialog Box

If you do not have any free interrupts you may need to disable a COM port for an installed device that you are not currently using, such as COM2.

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To disable COM2, boot your system and enter your BIOS setup. You can normally invoke the BIOS setup menu by pressing a key or a combination of keys at the first boot up screen. Some of the common keys are DELETE, F1, F2, CTRL+ALT+S, CTRL+ALT+ESC. (Watch the text that appears as you turn your computer on--there will probably be instructions on how to enter "SETUP"--following these instructions will give you access to the BIOS. If none of these key combinations work, refer to your computer's user's manual for instructions on how to access the BIOS setup.

Once inside the BIOS setup, find the menu for "integrated peripherals," locate the COM port settings, then disable COM2 or Comport B. **Save your settings before exiting the BIOS Setup.** The computer will reboot.

Disable the COM port in Device Manager as well. To do this, right-click the **My Computer** icon on the desktop, and choose **Properties** from the menu that appears. Click the **Device Manager** tab. Double-click the **Ports (COM & LPT)** icon to expand the list and click **Communication Port (COM2)** to select it. Click **Properties.** Click to select **Disable in this hardware profile** in Windows 95B and Windows 98, or click to deselect **Original Configuration (current)** in Windows 95 or Windows 95A. Restart your system.

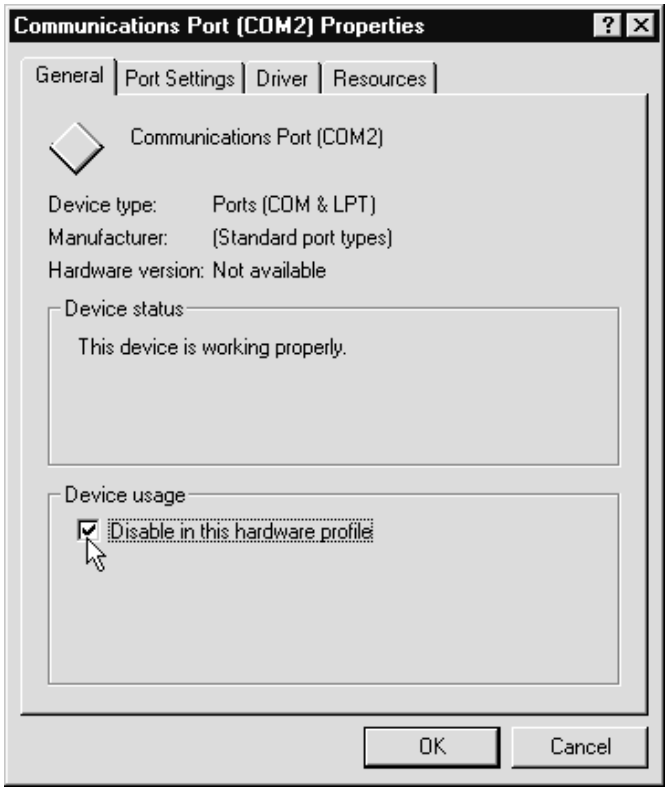

Figure 3a: COM2 Properties Dialog Box

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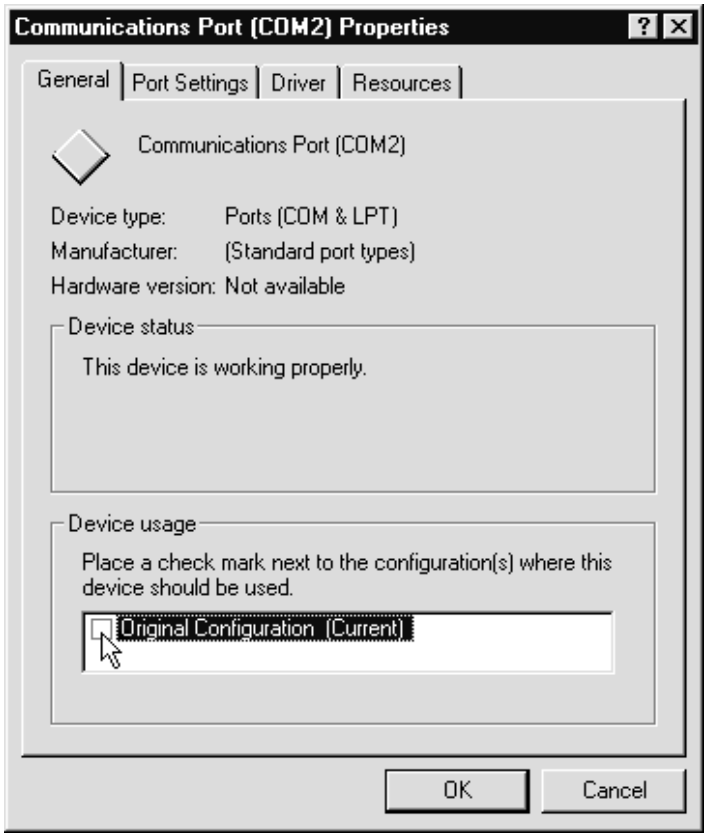

Figure 3b: Windows 95 (or 95A) COM2 Disable Panel

Proceed to the section titled “Installing the Modem.”

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For Windows NT 4.0 Installation

Remove all other modem drivers from your operating system. On the **Start** menu, click **Settings** then click **Control Panel.** In Control Panel, double-click on the **Modems** icon. Select the modem you wish to remove and click **Remove.** Turn off the computer and physically remove the modem from your system. Do not install your new modem at this time. Follow the procedures below. *Once you remove the old modem and its drivers from your system, you will need the old modem driver diskette if you wish to reinstall it at a later date*.

On the **Start** menu, click **Programs,** then click **Administrative Tools,** then click **Windows NT Diagnostics.** Click the **Version** tab. "Service Pack 3" (or greater) should be installed in Windows NT 4.0.

Before installing the modem, you must enable ISA Plug-N-Play support within Windows NT. First set your system BIOS to "PnP OS" and then insert the Windows NT 4.0 CD-ROM into your systems CD-ROM Drive. The Startup window for Windows NT 4.0 should appear after a few moments. Click **Browse This CD.** Double-click the **Drvlib** folder. From the new panel double-click on the **Pnpisa** folder. Another panel will appear. Double-click on the **x86** folder. The contents of this folder should contain a file labeled **Pnpisa**. Right-click the file's icon and a pop-up menu will appear. From this menu click **Install.** After ISA Plug-N-Play is enabled, restart your system. When the system has restarted, in **Control Panel** double-click on the **Devices** icon. Scroll down the new menu and highlight **PnP ISA Enabler Driver**. Click the **Startup** button and select the **System** option. See Fig.4 below.

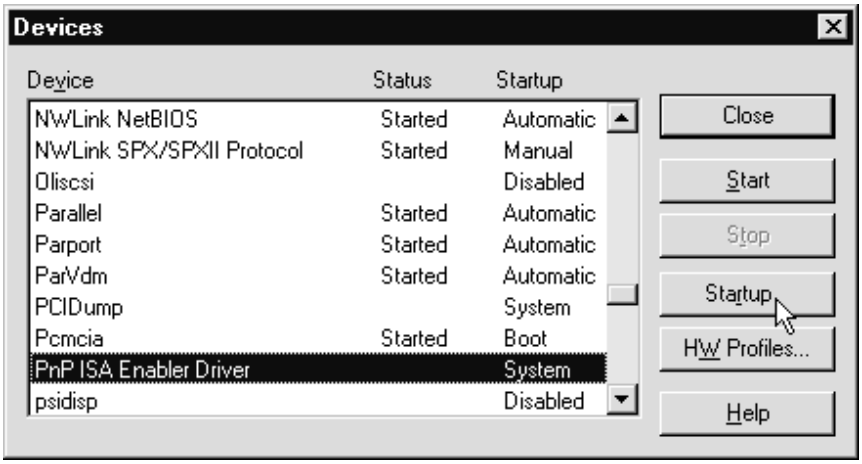

Fig. 4: Devices Window

Proceed to the section titled "Installing the Modem."

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Installing The Modem

Always discharge static electricity before handling your modem. You may discharge static electricity by touching a grounded metal structure or by using any commercially available grounding strap.

Make sure the expansion slot type is 16-bit, which has two slots to fit the ISA card. 8-bit slots have only one connector. If you use an 8-bit slot, the modem will not have access to the higher interrupts (IRQ 9-12).

The position of the expansion slots in your computer may differ from the illustration shown but the installation procedure should be the same.

Hardware Installation

1. Turn off the computer and all peripheral devices connected to it.

2. Unplug the computer power cord from the wall receptacle.

3. Remove the computer's cover. Refer to your computer owner's manual for instructions.

4. Remove the screw securing the expansion slot cover behind one of the computer's available 16-bit ISA expansion slots. Lift the expansion slot cover out as shown below.

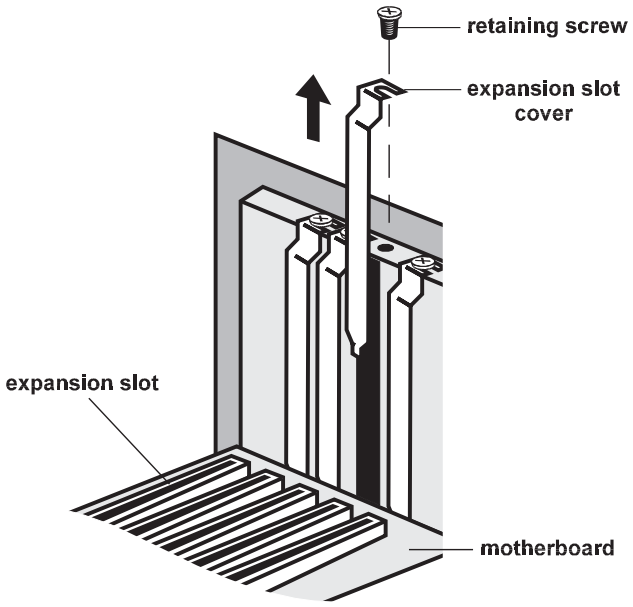

Figure 5: Removing the Backplate

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5. Firmly, but gently, insert the modem into the available 16-bit expansion slot. Ensure that the card is seated properly before securing it with the screw removed in Step 4, as shown in the following diagram:

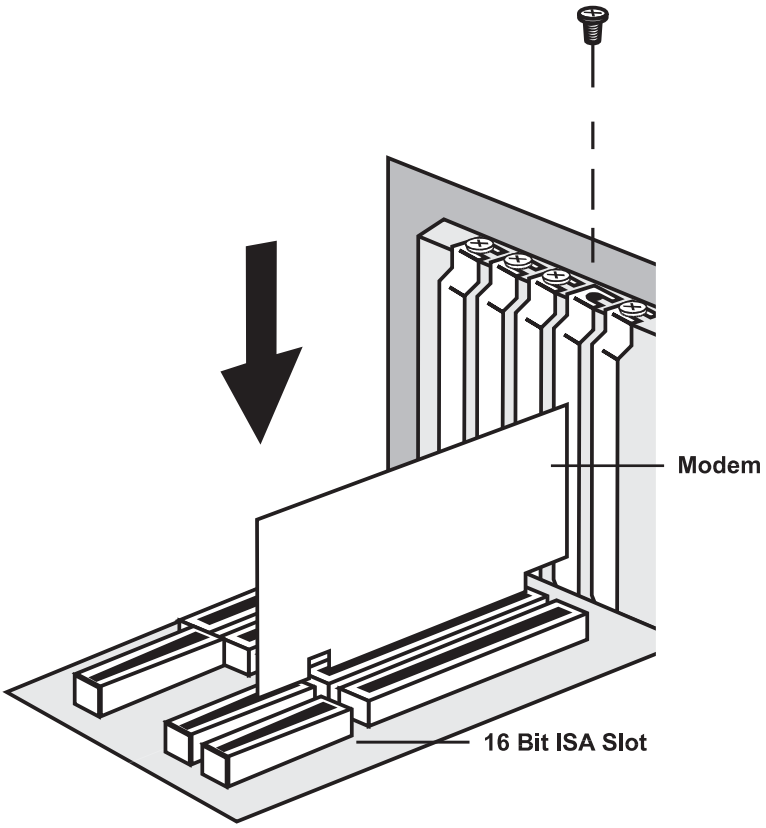

Figure 6: Installing The Modem

6. Put the chassis cover back on the computer.

7. Be sure that all power switches are in the OFF position, then reconnect the power cables to the computer and its peripherals.

8. Connect the telephone line cable to the "Line (Telco)" jack as shown in Figure 7.

9. Turn on the computer and proceed to the following sections to configure your modem to the operating system you are using.

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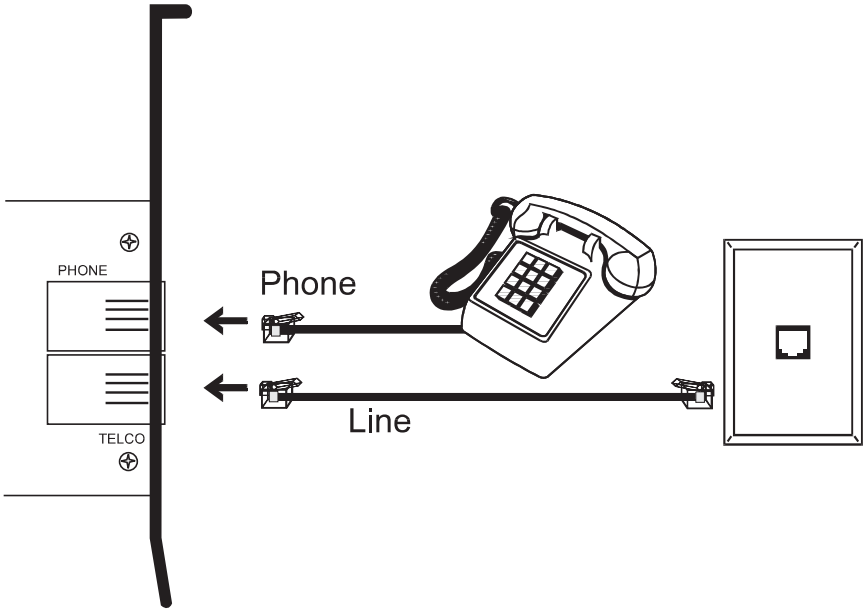

Fig.7: Connecting Devices

On the rear panel of your modem are input jacks to connect devices to the modem. As shown in the diagram, there are jacks for connection to a "phone" and to a phone "line." *The connector labeled Line (Telco) is meant to be connected to a standard analog phone line.*

To help reduce the load on your phone line, it is recommended that the modem be the only device connected.

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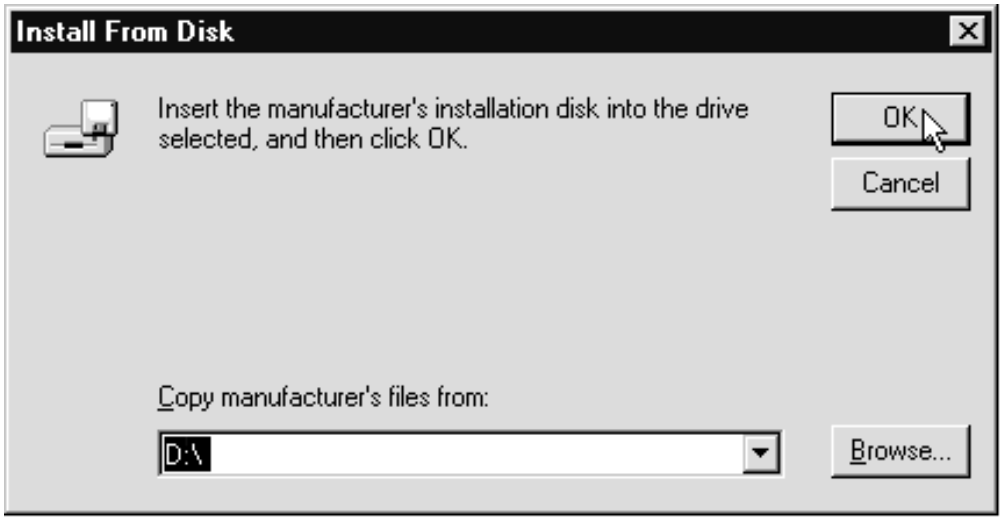
Configuring Windows 95

Step 1 Upon startup, Windows 95 detects the modem and displays the **New Hardware Found** dialog box. Select "Driver from disk provided by hardware manufacturer" then click **OK**.

New Hardware Found
LT Win Modem
Select which driver you want to install for your new hardware:
Windows default driver
Driver from disk provided by hardware manufacturer
Do not install a driver (Windows will not prompt you again)
Select from a list of alternate drivers
OK
Cancel
Help

Step 2 Type your CD-ROM drive's drive letter into the **Copy manufacturer's files from** box. Insert the Installation CD-ROM and click **OK.**



Step 3 If Windows asks for an installation disc, click **OK** and type the drive letter for you CD-ROM drive in the dialog box that appears and click **OK**.

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Step 4 After the installer has copied the .INF files to the hard disk, a **New Hardware Found** dialog box should appear prompting for the "Wave Device for Voice Modem". Click **OK**. (See "Do This First" for information on UNIMODEM.INF if this screen does not appear).

New Hardware Found
Wave Device for Voice Modem
Select which driver you want to install for your new hardware:
Windows default driver
Driver from disk provided by hardware manufacturer
Do not install a driver (Windows will not prompt you again)
Select from a list of alternate drivers
OK
Cancel
Help

Step 5 Click **OK** to copy the Wave Device .INF file from the CD-ROM drive to the hard drive. Windows may request its own installation diskettes for some files. Insert the Windows CD-ROM as required.

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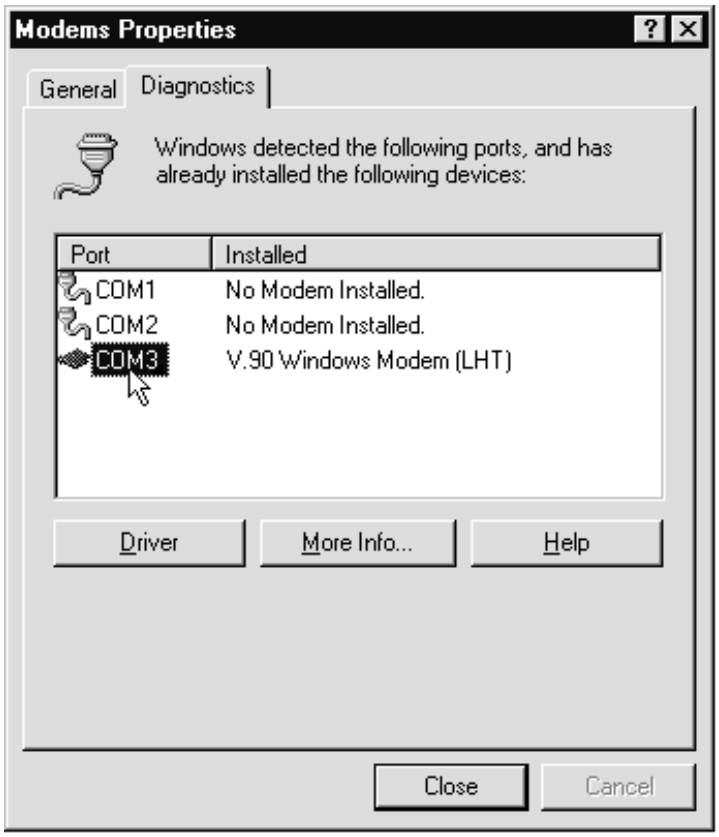
Step 6 To determine what COM port and IRQ is assigned to the modem in Windows 95, click on the **Modems** icon in **Control Panel** and select the **Diagnostic** tab. Click on the COM Port icon and then on the **More Info** button to view the modem properties.



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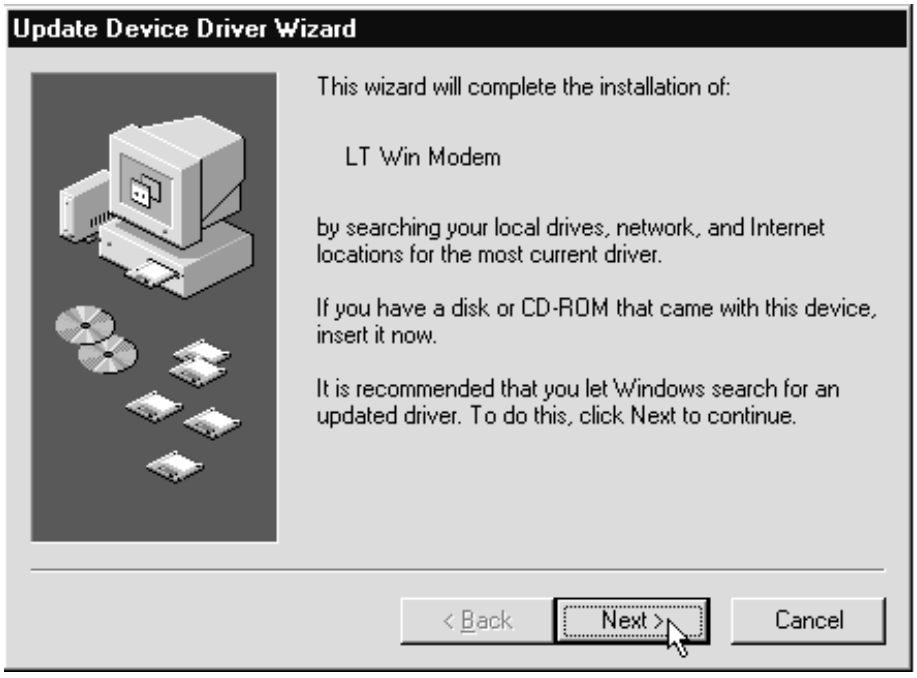
Configuring Windows 95 OEM SR2

Step 1 Upon startup, Windows 95 detects the modem and launches the **Update Device Driver Wizard** dialog box. Insert the modem's installation CD-ROM and click **Next.**


Update Device Driver Wizard
This wizard will complete the installation of:
LT Win Modem
by searching your local drives, network, and Internet locations for the most current driver.
If you have a disk or CD-ROM that came with this device, insert it now.
It is recommended that you let Windows search for an updated driver. To do this, click Next to continue.
< Back
Next >
Cancel

Step 2 After Windows 95 has found the updated drivers for your modem, click **Finish.**

Update Device Driver Wizard
Windows found the following updated driver for this device:
V.90 Windows Modem (LHT)
If you want to use this driver, click Finish. If this is not the correct driver and you want to search for a different driver manually, click Other Locations.
Location of Driver
Other Locations...
< Back
Finish
Cancel

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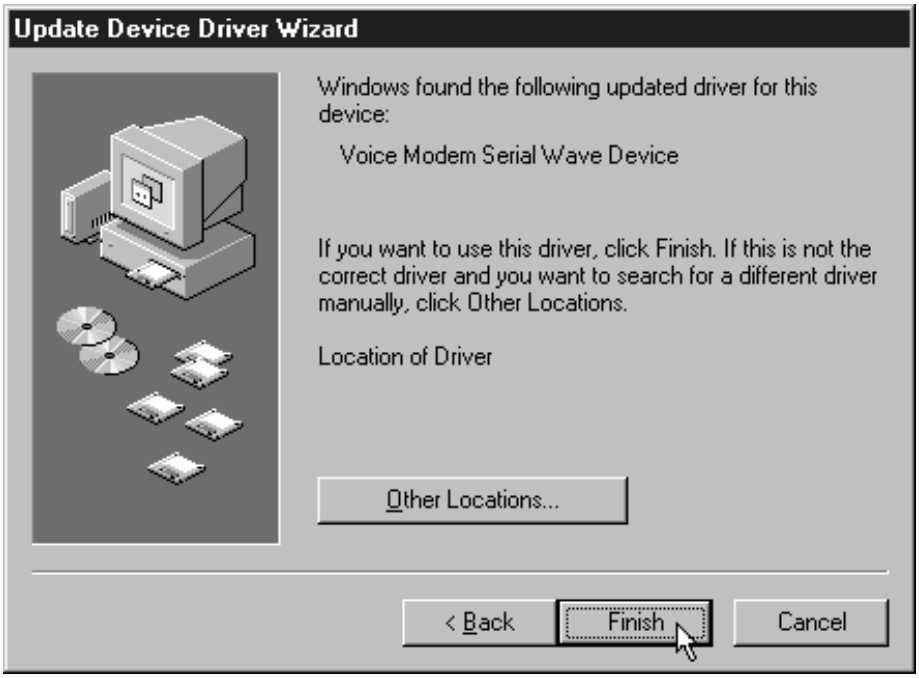
Step 3 If Windows asks for its own installation disc, click **OK.** Insert the requested CD-ROM, type the drive letter of your CD-ROM in the dialog box that appears next, and click **OK.**

Step 4 After the Wizard has copied the .INF files to the hard disk, it should detect "Wave Device for Voice Modem" and prompt for its driver. Click **Next.**

Update Device Driver Wizard
This wizard will complete the installation of:
Wave Device for Voice Modem
by searching your local drives, network, and Internet locations for the most current driver.
If you have a disk or CD-ROM that came with this device, insert it now.
It is recommended that you let Windows search for an updated driver. To do this, click Next to continue.
< Back
Next >
Cancel

Step 5 Click **Finish** to copy the Wave Device .INF file from the CD-ROM drive to the hard drive. Windows may request its own installation diskettes for some files. Insert the Windows CD-ROM as required.


Update Device Driver Wizard
Windows found the following updated driver for this device:
Voice Modem Serial Wave Device
If you want to use this driver, click Finish. If this is not the correct driver and you want to search for a different driver manually, click Other Locations.
Location of Driver
Other Locations...
< Back
Finish
Cancel

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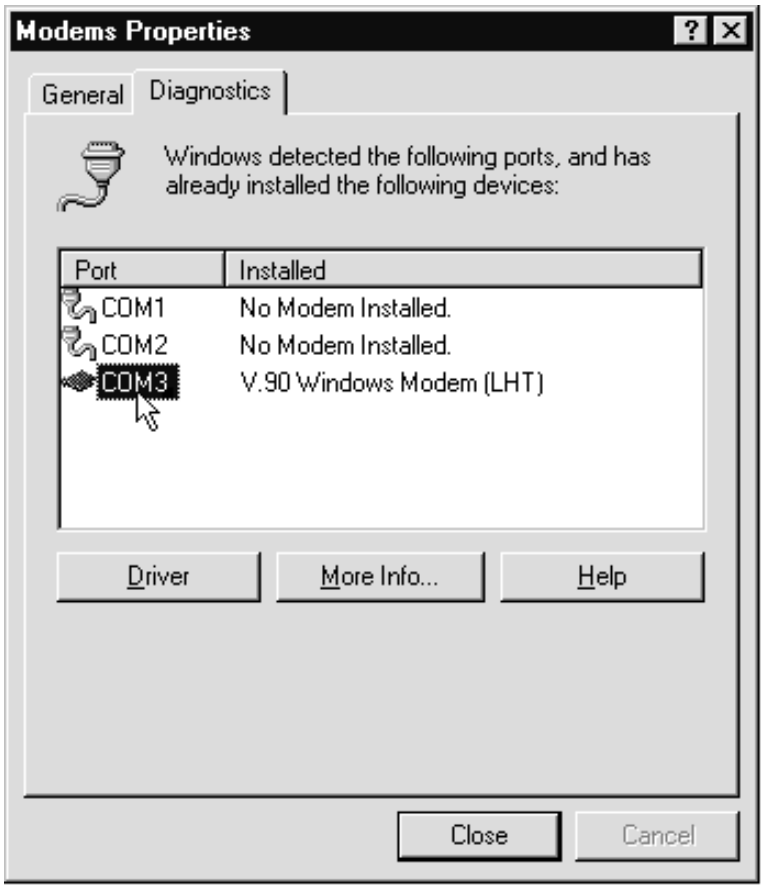
Step 6 To determine what COM port and IRQ is assigned to the modem in Windows 95, click on the **Modems** icon in **Control Panel** and select the **Diagnostics** tab. Select your modem and then click on the **More Info** button to view the modem properties.



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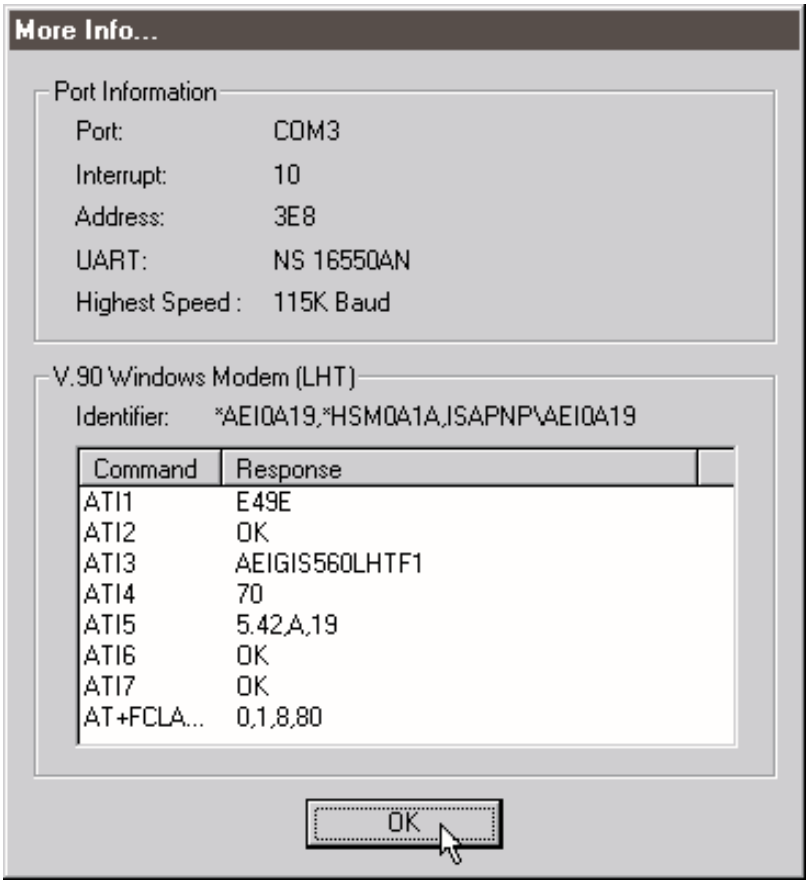
Step 7 Remember this COM port number. When you install your Data/Fax software or internet browser program, you may need to set your modem port location to this same number.



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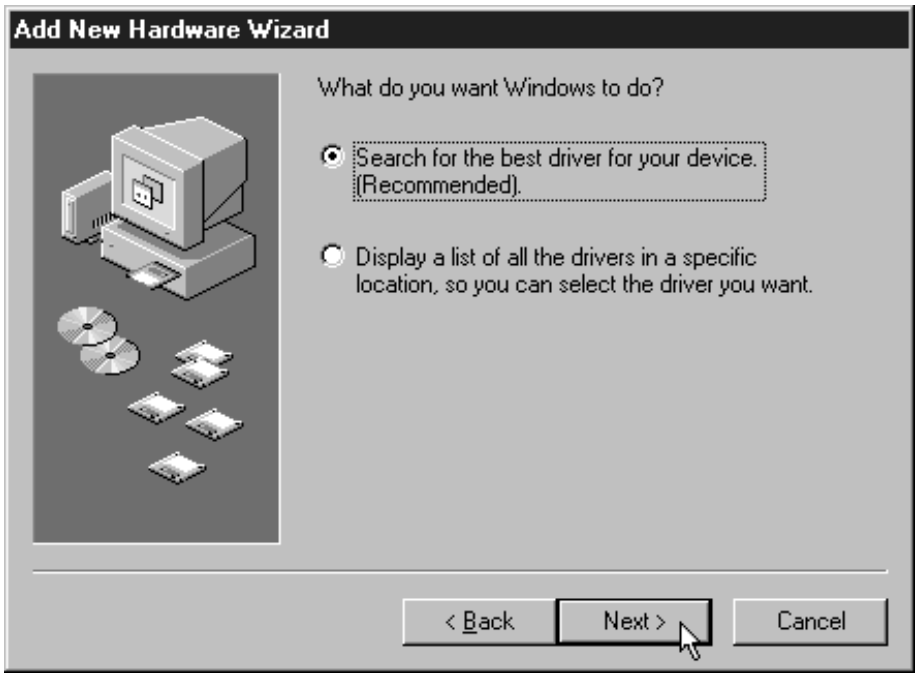
Configuring Windows 98

Step 1 After installing the modem hardware, turn on your computer. Windows will detect the modem and start the Add New Hardware Wizard. Click **Next.**

Add New Hardware Wizard
This wizard searches for new drivers for:
LT Win Modem
A device driver is a software program that makes a hardware device work.
< Back
Next >
Cancel

Step 2 The Add New Hardware Wizard will ask if you would like it to "search for the best driver for your device (Recommended)." If this option is not already selected, click it, then click **Next.**


Add New Hardware Wizard
What do you want Windows to do?
Search for the best driver for your device. (Recommended).
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

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Step 3 The Wizard will ask where it should search for the drivers. Click "CD-ROM drive" to select it. Make sure the installation CD-ROM is in the CD-ROM drive. Click **Next.**

Add New Hardware Wizard
Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
A:\
Browse...
< Back
Next >
Cancel

Step 4 Next the Wizard will identify the driver file and report its location on the CD-ROM drive. Click the **Next** button to copy and install the driver.

Add New Hardware Wizard
Windows driver file search for the device:
V.90 Windows Modem (LHT)
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
D:\LTDFT.INF
< Back
Next >
Cancel

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Step 5 After copying the files to your hard drive, the wizard will report that it is finished installing the drivers for the modem. Click **Finish.**

Add New Hardware Wizard
V.90 Windows Modem (LHT)
Windows has finished installing the software that your new hardware device requires.
< Back
Finish
Cancel

Step 6 Windows will now detect a "Wave Device for Voice Modem" and start the Add New Hardware Wizard again to find the drivers for the voice capabilities of your modem. Click **Next.**

Add New Hardware Wizard
This wizard searches for new drivers for:
Wave Device for Voice Modem
A device driver is a software program that makes a hardware device work.
< Back
Next >
Cancel

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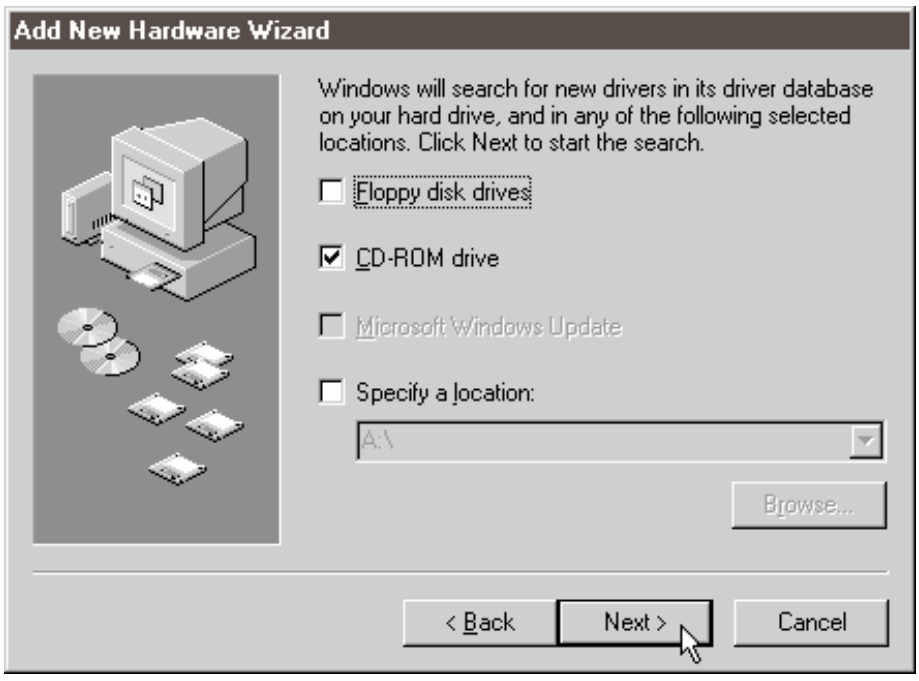
Step 7 The Add New Hardware Wizard will ask if you would like it to "search for the best driver for your device (Recommended)." If this option is not already selected, click it, then click **Next.**

Add New Hardware Wizard
What do you want Windows to do?
Search for the best driver for your device. (Recommended).
Display a list of all the drivers in a specific location, so you can select the driver you want.
< Back
Next >
Cancel

Step 8 The Wizard will ask where it should search for the drivers. Click "CD-ROM drive" to select it. Make sure the installation CD-ROM is in the CD-ROM drive. Click **Next.**


Add New Hardware Wizard
Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.
Floppy disk drives
CD-ROM drive
Microsoft Windows Update
Specify a location:
A:\
Browse...
< Back
Next >
Cancel

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Step 9 Next the Wizard will identify the driver file and report its location on the CD-ROM drive. Click the **Next** button to copy and instal the driver.

Add New Hardware Wizard
Windows driver file search for the device:
Voice Modem Serial Wave Device
Windows is now ready to install the best driver for this device. Click Back to select a different driver, or click Next to continue.
Location of driver:
D:\LTWAVE.INF
< Back
Next >
Cancel

Step 10 Windows will copy and install the files, and then display the dialog box below, reporting that the process has finished. Click **Finish.**

Add New Hardware Wizard
Voice Modem Serial Wave Device
Windows has finished installing the software that your new hardware device requires.
< Back
Finish
Cancel

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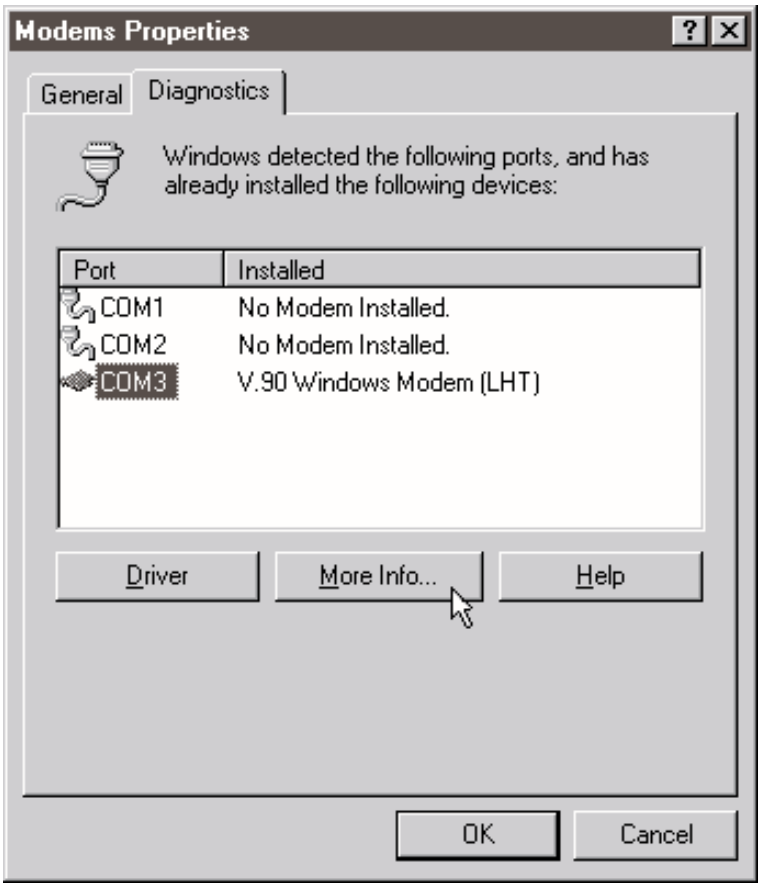
Step 11 Windows will finish loading. To make sure your modem has been installed correctly, click **Start** on the taskbar. On the **Start** menu, click **Settings,** then click **Control Panel.** In **Control Panel,** double-click the **Modems** icon, then click the **Properties** tab to bring it to the front. On the Modems Properties tab, click the COM port number (COM 3 in the illustration below) to select the modem, then click **More Info.**



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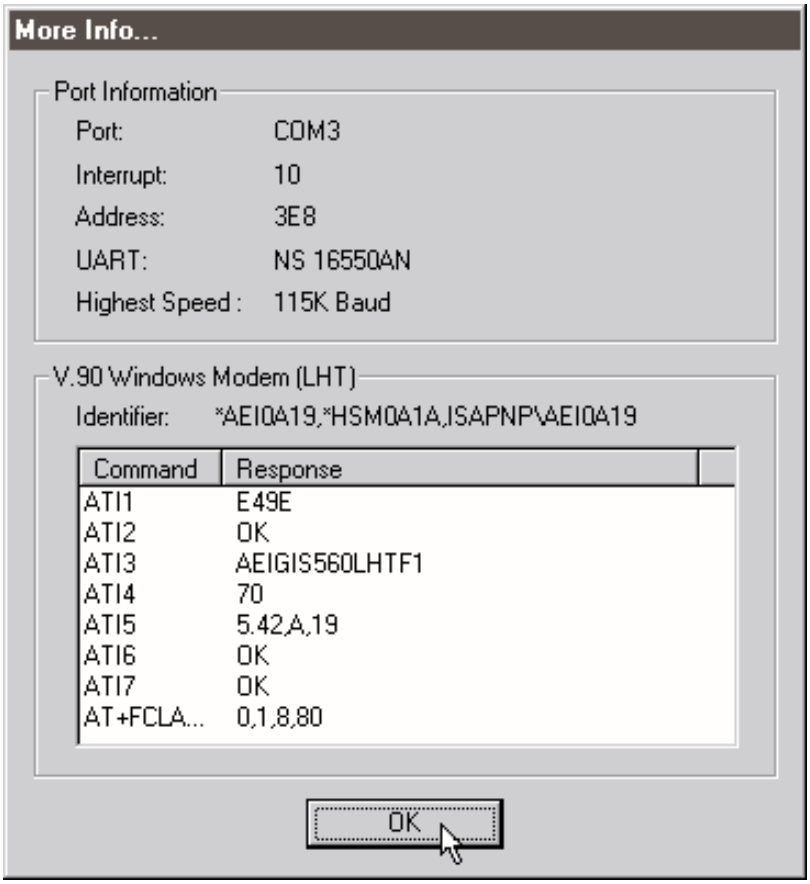
Step 12 Check that the More Info dialog box that appears on your screen matches the illustration below. Make a note of the interrupt (also known as an IRQ) and the port number. These will be needed to configure your communications software.



Your modem is now installed and configured for use with Windows 98.

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Configuring Windows NT 4.0

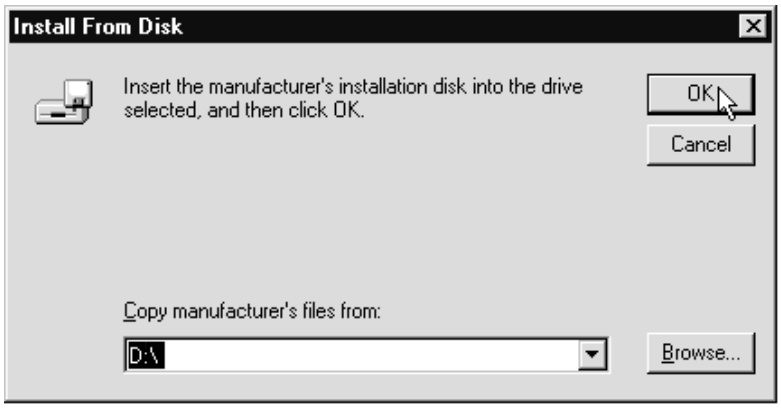
Before installing the modem, make sure you have installed the PnP ISA Enabler and the latest Service Pack upgrade to Windows NT 4.0. See the section titled "Do This First" for details.

Step1 Install the modem hardware and turn on your computer. Upon startup, Windows NT 4.0 detects your modem and displays the **New Hardware Found** dialog box. Select "**Driver from disk provided by hardware manufacturer**" then click **OK**.

New Hardware Found
LT Win Modem
Select which driver you want to install for your new hardware:
Windows default driver
Driver from disk provided by hardware manufacturer
Do not install a driver (Windows will not prompt you again)
Select from a list of alternate drivers
OK
Cancel
Help

Note: Windows NT may detect other devices in your computer. If so, select "Do not install a driver (Windows will not prompt you again)" for these devices.

Step 2 Insert the modems installation CD-ROM and click **OK**.



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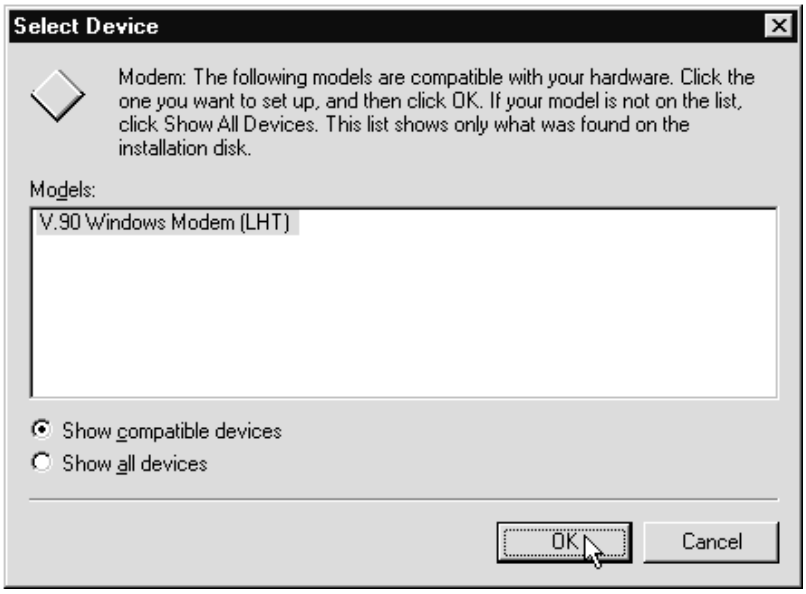
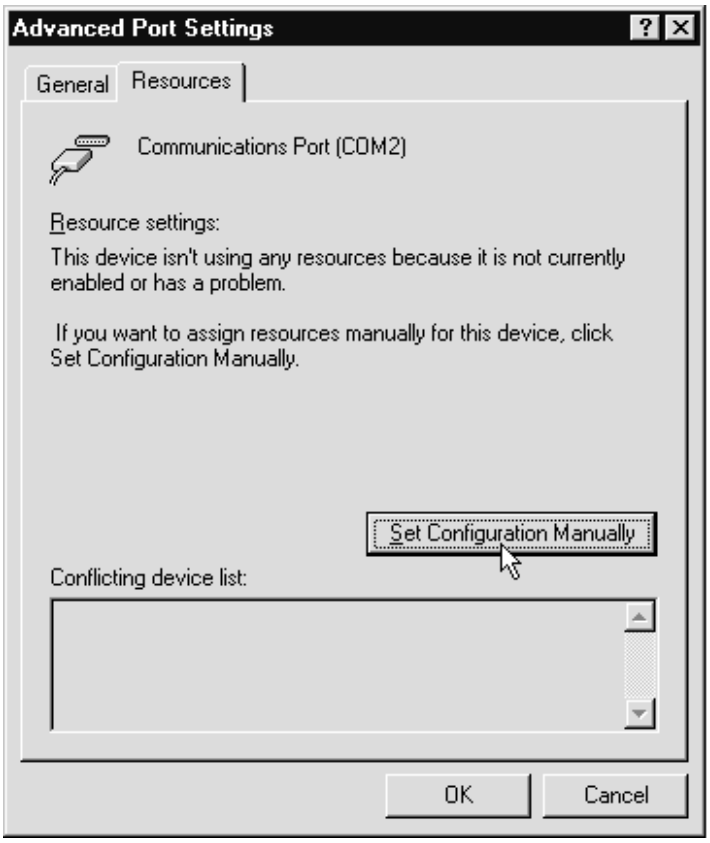
Step 4 A panel for selecting the device to be installed should appear. Highlight the "V.90 Windows Modem (LHT)" selection and click **OK**.


Select Device
Modem: The following models are compatible with your hardware. Click the one you want to set up, and then click OK. If your model is not on the list, click Show All Devices. This list shows only what was found on the installation disk.
Models:
V.90 Windows Modem (LHT)
Show compatible devices
Show all devices
OK
Cancel

Step 5 If you see the following dialog box, you will need to set the configuration manually.


Advanced Port Settings
General
Resources
Communications Port (COM2)
Resource settings:
This device isn't using any resources because it is not currently enabled or has a problem.
If you want to assign resources manually for this device, click Set Configuration Manually.
Set Configuration Manually
Conflicting device list:
OK
Cancel

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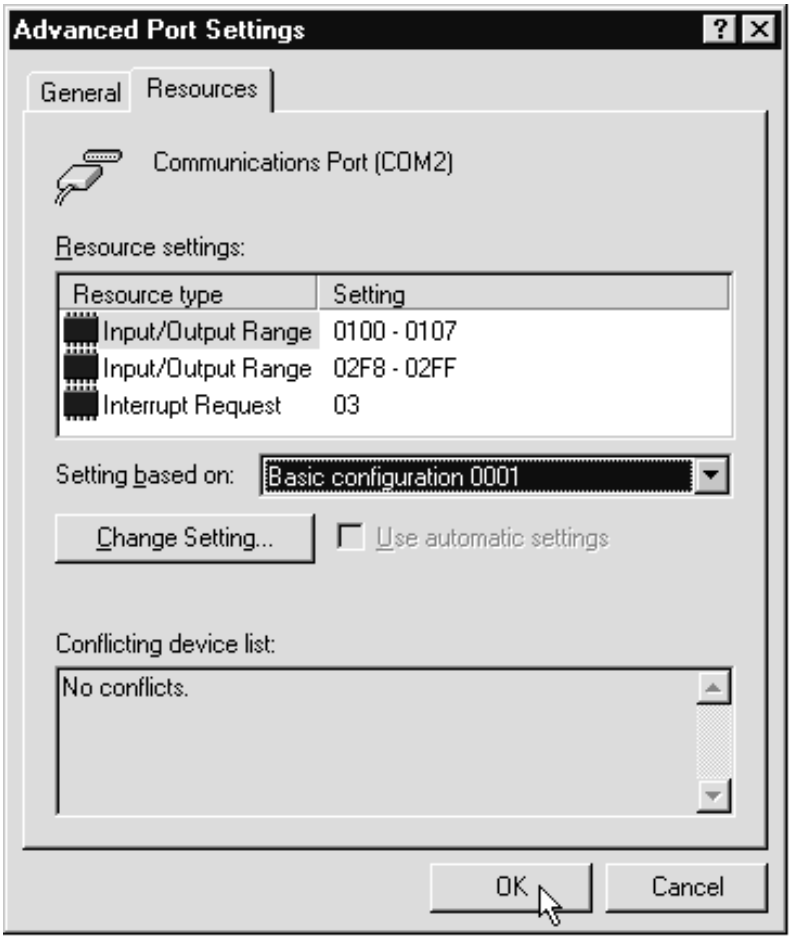
Step 6 Select the Resource Settings which do not cause any conflicts with other devices.



Step 7 Restart your computer.

Step 8 Click on the **Modems** icon in the **Control Panel**. Verify that Windows NT has correctly found the modem.

Step 9 If you wish to use your modem to dial into a Windows NT Remote Access Server or wish to connect to the Internet, you will need to configure Dial-up Networking. If you do not see the Remote Access Setup Panel installation, In Control Panel double-click the **Network** icon. Click on the **Services** folder and select **Remote Access Service**. If no Remote Access Service option is listed click **Add.** Select **Remote Access Service.** and click **OK.** Windows NT may ask for its own CD-ROM for some files. Insert as required. After you have installed Remote Access Service add the appropriate protocols as directed.

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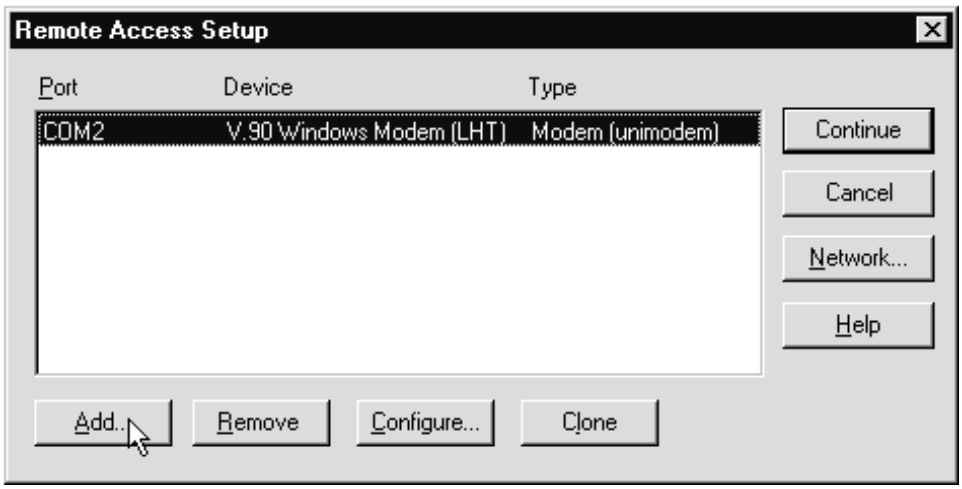
Step 10 At the **Remote Access Setup** dialog box, click on **Add.** Select the Remote Access Setup device you wish to add and Click **OK.**



Step 11 Click **Continue** to finish the installation.

Step 12 After Windows NT has completed the binding process, allow Windows NT to shut down and restart the computer.

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Installing and Configuring Communications Software

If your modem came with a communications software package, it is strongly recommended that you use this software for your modem. It's default installation parameters have been specially configured to work with this modem. The Users Guide for this program can be found inside the modem package. It can be supplied in either soft-bound copy or on CD-ROM (depending on the model you purchased). Some configurations are packaged without communications software. Check your packaging to see if communications software is included.

If you wish to use another software package, be sure that it supports this modem. Most Software Manufacturers have a listing of supported modems on their websites or BBSs. Check these sites to see if this model is supported. If you are unsure or your brand of software supports only a few modems, try selecting "Hayes Compatible" or "Standard Modem." This may work in certain cases.

Some software programs allow manual input of parameters. For the users of these programs, here is a listing of the Data/Fax/Voice Command Standards supported.

Data:	TIA/EIA-602
Fax:	TIA/EIA-578 for Class 1 Fax
Voice:	TIA IS-101 support for TAD (Telephone Answering Device)
Init String:	**AT&F&C1&D2W2**

TIA IS-101 Commands *not* supported:

Caller ID
Full Duplex Speakerphone
VoiceView

Note: some programs must be configured to communicate with the modem on the same COM port and or IRQ setting used by the modem. See the section titled "Installing the Modem" section for instructions on how to determine your COM Port and IRQ settings.

The Modem's Voice Features

This modem supports TIA IS-101 commands applicable to a Telephone Answering Device. In order to take advantage of this feature, you will need a Sound Blaster® compatible sound card equipped with an external microphone and external speakers. A software application which supports these TAM functions is also required.

A modem based Telephone Answering Machine works by using a sound card equipped with a microphone to record an outgoing message. This message is stored as a .wav file which is transferred to the modem by the application program when an incoming

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call is detected. The modem converts the digital information contained in the .wav file into an audio signal which is then sent over the phone line. The person calling hears your outgoing message and responds with an incoming message.

The sequence of recording an incoming message is the reverse of an outgoing message. The modem converts the audio signal into a digital format and sends it to the application program. The application program then formats and stores the incoming message as a .wav file. When you play back your stored messages by selecting them from within the application program, they are sent to the sound card. You then hear your recorded messages through the sound card's speakers.

The success of this process is dependent on the ability of the application program to communicate with both the sound card and the modem. If you wish to use your modem as a Telephone Answering Machine, experiment with the software witch came with your modem first. Its default parameters have been specially configured to identify and use your modems voice capabilities.

Troubleshooting

This section lists some common problems and offers suggestions for a solution. It is important to remember that this modem is a Windows 95/98/NT based modem and requires 32bit virtual device drivers. It therefore cannot work in Windows 3.1 which cannot use these drivers. The modem cannot be successfully installed in a DOS system, regardless of version. It is a purely Plug-N-Play device and has no provisions for manual configuration.

If you cannot find your particular symptom listed here, it is suggested that you remove the modem and its drivers from the system and reinstall them again (see "Uninstalling the Modem" later in this section). This provides a new, uncorrupted installation and can cure many temporary problems. Be sure to check the "Do This First" section for important system preparation before reinstalling the modem.

Most problems encountered during the Windows installation process are a result of insufficient system resources—no free COM Ports or Interrupts. Problems with Windows NT 4.0 installations are usually a result of not having ISA Plug-N-Play enabled. For these reasons it is strongly recommended that you carefully follow the preinstallation procedures outlined in the **Do This First** section. These steps have been thoughtfully chosen to help minimize difficulties during the installation of the modem in both Windows 95, Windows 98, and Windows NT 4.0.

If your modem has installed but is not functioning, try the following troubleshooting procedures.

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Windows 95 and Windows 98

Step 1: Check System Resources.

In **Control Panel** double-click the **System** icon. Click the **Device Manager** tab. In the list of devices, double-click the **Modems** icon to show what modems are installed. If there is no **Modems** icon, your modem did not install. If your modem is listed, check that there is no yellow exclamation mark or red "X" over the modem's icon (If there is some alteration to this icon, go to Step 2.) If any other modems are listed, highlight the modem by clicking once on the icon next to the listed modem and then click **Remove.** Turn off your computer. Wait 5 seconds and turn your computer back on. Repeat Step 1.

Step 2: Check Modem Properties.

From the **Device Manager** tab within **System Properties**, double-click the **Modems** icon in the list of devices to show what modems are installed. Highlight your modem by clicking once on the icon and then click the **Properties** button. Read the "Device Status" under the **General** tab to see if the device is working properly. Check the **Device Usage** box and make sure "Disable in this hardware profile" is not selected. (Windows 95 OEM SR2 and Windows 98 only). Make a note of the COM port and IRQ the modem is using.

Errors reported in the **Device Status** box generally refer to conflicts. Click the **Resources** tab and read the "Conflicting Device List." If a conflict is present, click to deselect "Use automatic Setting" and select a configuration that does not cause conflicts. Manually change the address and IRQ settings if needed. (Refer to Windows 95 on-line help for detailed about how to change these settings.) Click **OK.** If there is no setting free of conflicts, turn to the section of this manual titled "Does Not Install."

Step 3: Modem Diagnostics.

In Control Panel double-click the **Modems** icon. Your modem should be listed. If any other modem is also listed, click to select each of these other modems and then click the **Remove** button. Turn off your computer, wait 5 seconds and turn the power back on. Return to Control Panel and double click the **Modems** icon. Click the **Diagnostics** tab. Click the COM port designation next to your modem. Click **More Info.** You should see a dialog box like the following.

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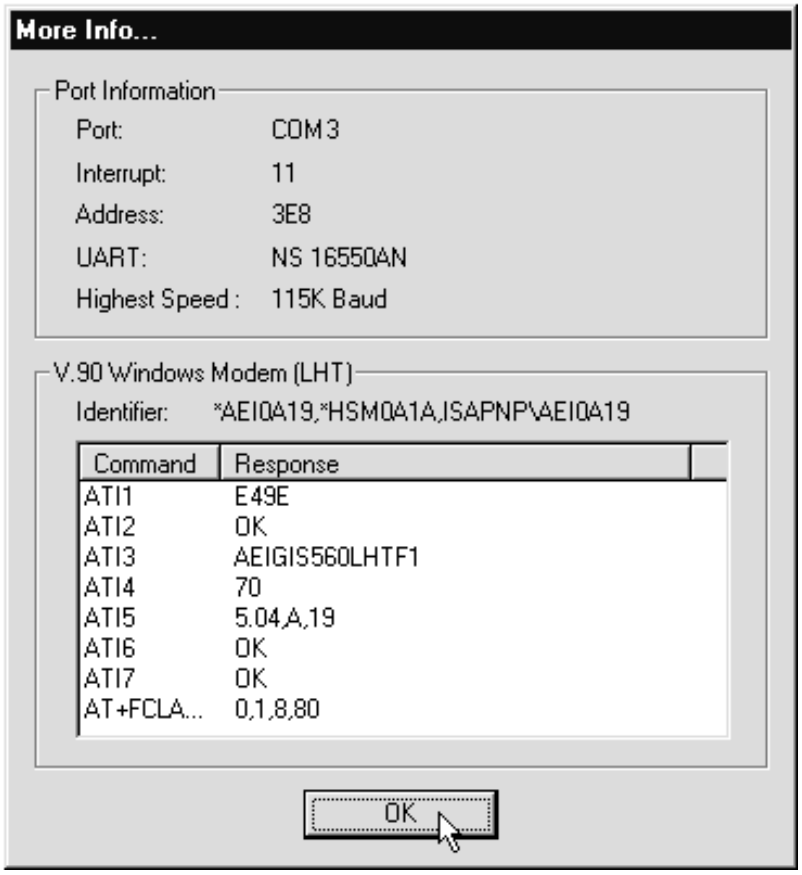

Figure 8: More Info Panel

If you receive an error message or the panel is blank, go to the section of this manual "Does Not Install."

Step 4: Does Not Install

The most likely reason for a non-installation in Windows 95 or 98 is a lack of IRQ resources. The modem needs one IRQ and one COM Port in order to function. Computers are usually equipped with a sound card, CD-ROM drive, Hard-drive, floppy drive, video card, two COM ports, one LPT port, keyboard, and a mouse. Each of these devices require at least one IRQ (interrupt) in order to function.

This section deals with the process of freeing IRQs and configuring P-N-P (Plug-N-Play) This requires that you know how to enter your computer system's BIOS Setup Routine—read your computer user's manual for information on how to enter into and use the BIOS setup.

Once inside the BIOS Setup, find the Plug-N-Play configuration and check the selection for "Operating System." This can be found within the "Advanced", "PNP/PCI Configuration", or "Plug and Play Configuration" section depending on the BIOS Manufacturer. If you have an Operating System selection, set it to "Plug-N-

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Play", or if you have "Plug N Play" settings, set them to "on." Next, from the information you noted in Step 2, find the interrupt selection for the IRQ your modem is using (some BIOS don't allow individual selection of interrupts to ISA, Plug-N-Play, or PCI). Set this interrupt to Plug-N-Play. This can be called ICU (ISA Configuration Utility), ICU/PCI, ISA, or PNP depending on your BIOS version and manufacturer. Do not set this interrupt to "PCI" only or to "Legacy ISA".

If you do not have any free interrupts available, you will have to disable a COM port currently in use. See the section of this manual titled "Do This First".

Uninstalling the Modem

If you are uninstalling the modem in Windows in order to upgrade software or reinstall the modem as part of a troubleshooting process, it is important to follow these directions carefully. Following these instructions out of sequence can cause your system to cease responding to the mouse, the keyboard, or both.

1. In **Control Panel**, double-click the **System** icon. Click the **Device Manager** tab. In the list of device groups, double-click the **Modems** icon. Click to select the listing for your modem and then click the **Remove** button.

2. In **Control Panel** double-click the **Modems** icon. If your modem is listed, click once on the icon next to the modem and then click **Remove.**. If the New Hardware Found panel comes up, click **Cancel.** (Your modem should not be listed in the **Modems** section after you have deleted it from the **Device Manager**. If it is, this could be a sign that your Plug-N-Play settings are not correct. See "Does Not Install" for information about Plug-N-Play.)

3. Close all open programs and return to the Windows desktop. On the **Start** menu, click **Find,** then click **Files or Folders** and search for the files listed below. Type in the name and extension of each and click **Find.** Once you find each of the files listed, click the file name to select it then on the File menu choose Delete. (Do not delete these files from your modem installation diskette. You will need your diskette to reinstall the modem).

ltcom.vxd	ltwave.inf
ltmodem.vxd	ltdft.inf
ltvcd.vxd	ltdsvd.dll
ltmodem.sys	ltports.inf

If you cannot find a particular file, it usually means it was not installed.

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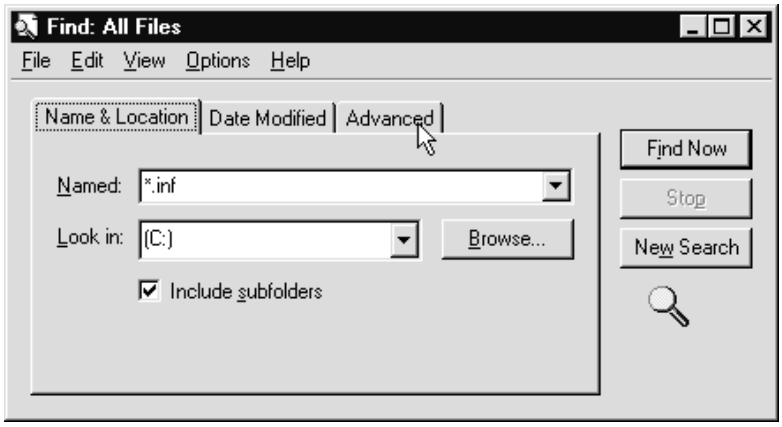
Note to users of Windows 95 and 98

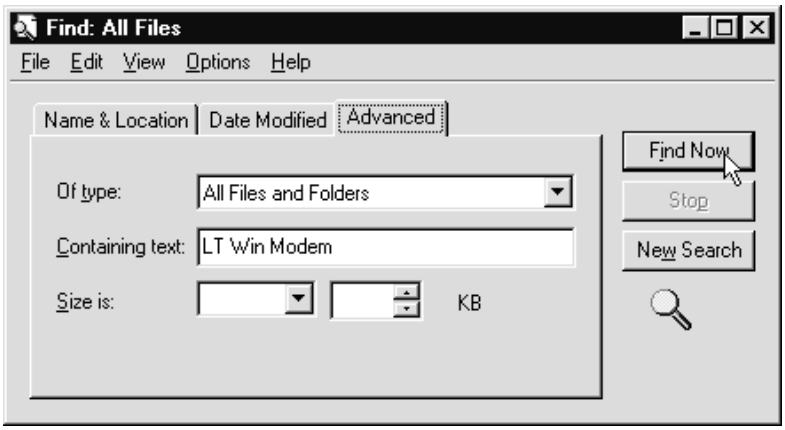
If you are using Windows 95 or 98, there are two additional files which may be generateed when installing a piece of hardware from an OEM. The file is called oem#.inf. The number (#) used is generated by Windows 95 each time an additional piece of hardware is installed. In the case of the modem, these files wil have numbers between 1 and 99 reflected in the filename--"oem8.inf", for example

On the **Start** menu, click **Find** then click **Files or Folders**. At the first screen, type in **.inf* in the **Named:** box. Make sure your entire drive is selected. Click to select **Include subfolders** box. Be sure all the information is typed in as shown below.

Before beginning the search, select the **Advanced** tab.



At the Advanced settings window, type the following in the "Containing text" field: *LT Win Modem*. Click **Find Now**.



When a file is found, it will have the name "oem#.inf." Delete only an oem inf file. To delete a file, highlight the file name by clicking once and then choose **Delete** from the **File** menu. After the file is deleted, you now need to find the other inf file. Go to the **Advanced** tab and type "LT_Win_Modem" in the "Containing text" field:

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After Windows finds the other file, delete it as before. Restart your system and follow the installation procedures in the section of this manual titled "Installing the Modem."

Note to users of Windows NT

Windows NT 4.0 installation problems are often due to inadequate preparation. The following conditions must be meet before attempting to install the modem or it will not be seen or correctly installed by the system. (See the "Do This First" at the beginning of this manual).

- ISA Plug-N-Play support must be installed within Windows NT.
- Plug-N-Play OS must be enabled in your system BIOS.
- You must have the latest Service Pack upgrade installed.
- There must be a free IRQ and COM Port available for the modem.

If you need help on freeing an interrupt, see "Windows 95 Does Not Install" for a discussion of this topic. The "Special Situations" and "Plug-N-Play BIOS" sections also apply to Windows NT 4.0. Do not use the procedure in Windows 95 for uninstalling the modem.

Common Problems

No Dialtone Error

Make sure you have connected the phone cable into the right connector on the back of the modem. See "Figure 7: Connecting Devices."

You may have too many devices connected to the phone line. Remove all other equipment.

Your modem may not recognize overseas dialtone. Use the AT command string "ATX0" to have the modem ignore the dialtone before dialing.

Communications Software Does Not Work

The communications software must be configured to the same COM Port and IRQ as the modem.

Does the communications software support this modem? See "Installing and Configuring Communications Software."

If you are using different communications software from that supplied with the modem, try installing the supplied software first to verify its functionality.

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Nothing Appears On The Screen When I Type

Issue the command *ATE1* to the modem to enable command echo. This will let you see what you type.

Cannot Connect at 56K

Note: Current FCC regulations limit your maximum connection rate to 53Kbits/s.

The number you are calling may not support V.90 or K56flex protocols. Some Internet Service Providers have special numbers that you must call to make 56K connections. Contact your service provider and ask if the number you are using supports V.90 or K56flex.

Check the maximum speed setting in the **Modem Properties** window. In Control Panel, double-click the **Modems** icon. Highlight your modem by clicking once on the icon next to the modem and then click the **Properties** button. Select the **General** tab and look at the setting in the *Maximum speed* box. Make sure this is set to 115200.

You may have other telephone devices connected to the phone line. To achieve the best connection possible, remove all extra devices connected to the telephone line when the modem is in use. This includes extension phones, answering machines, cordless phone bases, caller ID boxes and their cables. This reduces the load on your phone line and keeps signal attenuation to a minimum.

Keep the length of your phone line cable to 10 feet or less. If necessary, move the computer closer to the phone socket. Don't lay your cabling close to an electrical appliance like a refrigerator or air conditioner unit. High current devices can transmit 60 cycle "hum" to your modem through the phone cord. This may cause frequent renegotiations or line disconnects while the appliance is running.

The telephone line conditions at the time of your call may not let you connect at 56K. The modem has a connection sequence of K56flex, then V.90, then V.34, and so on. The modem attempts to make the highest connect rate that your telephone line can support at the time of negotiation. If the line conditions (noise, telephone company routing, etc.) won't allow a high data rate connection, then the modem will automatically connect at the most reliable rate. Try making the call again after a few minutes. The routing of the call may improve your chances of making a 56K connection.

If you are attempting to make a call from an office and you have to dial "9" to reach an outside number, you are using a PBX. The modem cannot connect faster then V.34 if you are using a PBX. Try using the line that is connected to a fax machine. Fax machines are usually connected to a dedicated line and not a PBX.

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Your phone line may not support or may only intermittently support a 56K connection. There are many conditions that must be met before a 56K connection can be established. The telephone company must have you connected to the (Public Switched Telephone Network) in a particular way. The modem you are calling must also support the same protocol.

The drivers for your modem are constantly being refined to address problems with compatibility, interoperability, and performance. Conditions that were thought insurmountable only months ago are now things of the past. As the industry converts to the new V.90 standard, current problems of connectivity and interoperability could also be things of the past. Check for driver upgrades on a regular basis. A problem connecting to a particular provider might be fixed by a simple software upgrade.

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Appendix B: Communications Regulations

FCC Regulations

The following statements are provided in accordance with the Federal Communications Commission (FCC) regulations. Please read these statements carefully before installing your modem.

FCC Part 68 Requirements

This equipment complies with Part 68 of the FCC Rules. On the bottom of this equipment is a label that contains, among other information, the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. If requested, this information must be given to the telephone company.

The REN is used to determine the maximum number of devices connected to your telephone line that will ring in response to an incoming call. In most, but not all, areas, the total REN of devices connected to a line should not exceed five (5.0). To find out the total permitted in your area, contact your local telephone company.

If your telephone equipment causes harm to the telephone network, the telephone company can discontinue your service temporarily. If possible, the company will notify you in advance. But if advance notice isn't practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company can make changes in its facilities, equipment, operations, or procedures that could affect the operation of your equipment. If so, you will be notified in advance so you can make the changes needed to maintain uninterrupted service.

If you experience trouble with this equipment, please contact the manufacturer at the address given in this manual. The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment in is not malfunctioning.

This equipment may not be used on public coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

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Declaration of Conformity

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio and television reception, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

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Canadian Department Of Communications (CDOC)

Requirements for End Users:

Notice: The Canadian Department of Communications label identifies certified equipment. This certification means the equipment meets certain telecommunications network requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment users should ensure that connection to the line is allowed by the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of a telephone extension cord. Compliance with the above conditions may not prevent degradation of service in certain situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

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